

SUPPLEMENTAL SPECIFICATION 940
14 FT TO 20 FT PRECAST REINFORCED CONCRETE BOX CULVERTS
DESIGNED ACCORDING TO AASHTO LRFD

940.01 Description
940.02 Typical Box Section
940.03 Design Criteria
940.04 Tables

This specification provides the reinforcing areas; wall and slab thicknesses; and the load rating for precast box sections with 14-ft to 20-ft spans. Provide precast reinforced concrete box sections conforming to C&MS 706.05 except as modified herein.

The diagram illustrates the reinforcement layout for a rectangular slab. Key components and labels include:

- Top Slab-Outside Reinforcement, As7**: Reinforcement bars along the top edge of the slab.
- Top Distribution Reinforcement, As6**: Reinforcement bars distributed across the top surface.
- Bottom Distribution Reinforcement, As5**: Reinforcement bars distributed across the bottom surface.
- Bottom Slab-Outside Reinforcement, As8**: Reinforcement bars along the bottom edge of the slab.
- Reinforcement Bars**: Labeled as Tt (top longitudinal), Ts (top transverse), $As1$ (top edge), $As2$ (top distribution), $As3$ (bottom distribution), $As4$ (bottom edge), and $As5$ (bottom longitudinal).
- Dimensions**: M (width), $Span$ (length), $Rise$ (height), and H (thickness).
- Corners**: Labeled as "All Corners (Typ.)" and "2" Cover All Faces (Typ.)".

As5 & As6 are required when the design earth cover is less than 2-ft.

940.03 Design Criteria.

See Table X1.1 in ASTM C1577, with the following additions and exceptions:

- I. Governing Specifications
 - a. AASHTO LRFD Bridge Design Specifications 6th Ed.
 - b. ASTM C1577 -14a, "Standard Spec. for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers Designed According to AASHTO LRFD"
 - c. Ohio Department of Transportation "Bridge Design Manual", 2004, effective 07-18-14
 - d. Ohio Department of Transportation's "Construction and Material Specifications", 2013
- II. Software Utilized
 - a. AASHTO Ware Bridge Design and Rating, Version 6.6.0
- III. Units
 - a. Design - U.S. Customary Units
- IV. Geometry
 - a. See table for box culvert geometry.
- V. Design Loads
 - a. Dead Loads
 - i. Materials
 - 1. Reinforced Concrete - 150 pcf
 - 2. Asphalt - 145 pcf
 - 3. Earth - 120 pcf, 125 pcf (saturated)
 - ii. The first 11" of cover are assumed to be pavement; any additional to get to full cover height is soil.
 - b. Future Dead Loads
 - i. Future Wearing Surface - 5" of asphalt
 - c. Live Loads
 - i. Vehicular
 - 1. Design - HL93 Truck & Tandem
 - 2. Rating - HL93 Truck & Tandem and NRL per AASHTO. ODOT Legal Loads, per BDM Section 900.
 - ii. No lane load
 - d. Earth Loads
 - i. Earth Pressure Coefficients
 - 1. At rest = 0.50
 - 2. Active = 0.33
 - 3. Passive = 3.0
 - ii. Max Lateral Pressure = 60 pcf, Min Lateral Pressure = 30 pcf
- VI. Material Specifications
 - a. Concrete
 - i. f'_c = 5,000 psi, See CMS 706.05 for additional requirements
 - b. Steel
 - i. Main Reinforcement - F_y = 65,000 psi, plain

- VII. Design Assumptions
 - a. 2" cover on all concrete faces
 - b. External water table is below box section invert
 - c. Assume 2' LL Surcharge.
 - d. Loads not listed are ignored
 - e. Factors
 - i. Capacity reduction (ODOT BDM 926.7-1)
 - 1. Shear - 0.90
 - 2. Axial compression & bending - 1.0
 - ii. Load Modifiers
 - 1. Non-redundancy - 1.05 for earth fill
 - 2. Multiple Presence Factor - Calculated in AASHTOWare Bridge Rating (Virtis), 1.2 for 1 lane
 - iii. Load Factors
 - 1. Dead Load
 - a. Min - 0.90, Max - 1.25
 - 2. Earth Load (Vertical) (ELV)
 - a. Max - 1.30, Min - 0.90
 - 3. Earth Load (Horizontal) (ELH)
 - a. Max - 1.35 (use 0.5x ELV for ELH)
 - 4. Live Load
 - a. 1.75
- VIII. Installation
 - a. Assume at rest earth pressures for embankment

940.04 Tables

Long Span Box Culvert Reinforcing Tables:

* Sidewall outside face steel (As1) must be bent and extended this far from the end into the outside face of the top slab to account for shear. The As1 steel area may be used for As7.

Span x Rise (ft)	Fill (ft)	Tt (in)	Tb (in)	Ts (in)	H (in)	As1 (in^2/ft)	As2 (in^2/ft)	As3 (in^2/ft)	As4 (in^2/ft)	As5 (in^2/ft)	As6 (in^2/ft)	As7 (in^2/ft)	As8 (in^2/ft)	M (in)		Load Rating						
																HL-93 Inventory	HL-93 Operating	2F1	3F1	4F1	5C1	NRL
14x4	0<2	12	12	12	12	0.72	0.60	0.60	0.29	0.29	0.29	0.29	0.29	64 *		1.01	1.31	1.98	1.56	1.58	1.56	1.41
	2<3	12	12	12	12	0.72	0.59	0.59	0.29			0.29	0.29	75		1.01	1.30	1.97	1.55	1.57	1.55	1.41
	3-5	12	12	12	12	0.72	0.53	0.53	0.29			0.29	0.29	70		1.09	1.41	2.25	1.68	1.74	1.68	2.07
	10	12	12	12	12	0.70	0.63	0.68	0.29			0.29	0.29	70		1.03	1.34	2.46	1.88	1.84	1.60	1.61
14x5	0<2	12	12	12	12	0.72	0.64	0.64	0.29	0.29	0.29	0.29	0.29	62 *		1.03	1.33	2.03	1.59	1.60	1.59	1.43
	2<3	12	12	12	12	0.72	0.62	0.62	0.29			0.29	0.29	70		1.00	1.30	1.98	1.55	1.56	1.55	1.40
	3-5	12	12	12	12	0.72	0.53	0.53	0.29			0.29	0.29	70		1.01	1.31	2.11	1.57	1.61	1.57	1.88
	10	12	12	12	12	0.66	0.66	0.74	0.29			0.29	0.29	65		1.07	1.38	2.53	1.94	1.90	1.65	1.66
14x6	0<2	12	12	12	12	0.72	0.68	0.60	0.29	0.29	0.29	0.29	0.29	61 *		1.04	1.35	2.07	1.61	1.55	1.61	1.33
	2<3	12	12	12	12	0.65	0.68	0.57	0.29			0.29	0.29	61		1.06	1.37	2.10	1.63	1.51	1.63	1.29
	3-5	12	12	12	12	0.65	0.57	0.57	0.29			0.29	0.29	70		1.06	1.38	2.22	1.64	1.68	1.64	1.94
	10	12	12	12	12	0.66	0.70	0.73	0.29			0.29	0.29	65		1.07	1.39	2.55	1.95	1.91	1.66	1.67
14x7	0<2	12	12	12	12	0.62	0.68	0.62	0.29	0.29	0.29	0.29	0.29	61 *		1.00	1.30	2.00	1.55	1.54	1.55	1.31
	2<3	12	12	12	12	0.62	0.68	0.62	0.29			0.29	0.29	70		1.02	1.32	2.03	1.57	1.56	1.57	1.33
	3-5	12	12	12	12	0.60	0.62	0.62	0.29			0.29	0.29	65		1.12	1.45	2.35	1.72	1.76	1.72	2.02
	10	12	12	12	12	0.55	0.72	0.77	0.29			0.29	0.29	65		1.06	1.38	2.53	1.94	1.90	1.64	1.65
14x8	0<2	12	12	12	12	0.57	0.74	0.68	0.29	0.29	0.29	0.29	0.29	61 *		1.08	1.40	2.16	1.66	1.63	1.66	1.39
	2<3	12	12	12	12	0.57	0.74	0.63	0.29			0.29	0.29	70		1.09	1.41	2.19	1.68	1.51	1.69	1.29
	3-5	12	12	12	12	0.57	0.62	0.62	0.29			0.29	0.29	70		1.08	1.39	2.27	1.66	1.69	1.66	1.92
	10	12	12	12	12	0.60	0.74	0.78	0.29			0.29	0.29	65		1.01	1.31	2.40	1.84	1.80	1.56	1.57
14x9	0<2	12	12	12	12	0.56	0.74	0.68	0.29	0.29	0.29	0.29	0.29	61 *		1.05	1.36	2.11	1.62	1.57	1.62	1.34
	2<3	12	12	12	12	0.56	0.74	0.68	0.29			0.29	0.29	75		1.06	1.38	2.14	1.64	1.59	1.64	1.36
	3-5	12	12	12	12	0.56	0.62	0.62	0.29			0.29	0.29	70		1.04	1.35	2.21	1.61	1.64	1.61	1.84
	10	12	12	12	12	0.65	0.76	0.80	0.29			0.29	0.29	70		1.04	1.34	2.46	1.89	1.85	1.60	1.61
14x10	0<2	12	12	12	12	0.56	0.74	0.68	0.29	0.29	0.29	0.29	0.29	61 *		1.03	1.33	2.07	1.58	1.52	1.58	1.30
	2<3	12	12	12	12	0.53	0.74	0.68	0.29			0.29	0.29	80		1.04	1.35	2.10	1.60	1.54	1.60	1.32
	3-5	12	12	12	12	0.53	0.68	0.68	0.29			0.29	0.29	75		1.13	1.47	2.41	1.75	1.77	1.75	2.01
	10	12	12	12	12	0.68	0.78	0.83	0.29			0.29	0.29	70		1.08	1.40	2.57	1.97	1.93	1.67	1.68

Span x Rise (ft)	Fill (ft)	Tt (in)	Tb (in)	Ts (in)	H (in)	As1 (in^2/ft)	As2 (in^2/ft)	As3 (in^2/ft)	As4 (in^2/ft)	As5 (in^2/ft)	As6 (in^2/ft)	As7 (in^2/ft)	As8 (in^2/ft)	M (in)		Load Rating						
																HL-93 Inventory	HL-93 Operating	2F1	3F1	4F1	5C1	NRL
<u>16x4</u>	0<2	12	12	12	12	0.96	0.74	0.64	0.29	0.29	0.29	0.29	0.29	69 *		1.01	1.31	2.05	1.55	1.54	1.56	1.30
	2<3	12	12	12	12	0.91	0.74	0.62	0.29			0.29	0.29	78		1.03	1.33	2.08	1.51	1.56	1.59	1.27
	3-5	12	12	12	12	0.92	0.68	0.62	0.29			0.29	0.29	78		1.11	1.44	2.34	1.71	1.73	1.71	1.76
	10	12	12	12	12	1.24	0.81	0.88	0.29			0.29	0.29	72		1.02	1.32	2.41	1.85	1.81	1.57	1.58
<u>16x5</u>	0<2	12	12	12	12	0.93	0.83	0.68	0.29	0.29	0.29	0.29	0.29	68 *		1.08	1.41	2.21	1.53	1.59	1.68	1.28
	2<3	12	12	12	12	0.85	0.83	0.68	0.29			0.29	0.29	78		1.10	1.43	2.24	1.56	1.61	1.70	1.31
	3-5	12	12	12	12	0.85	0.68	0.65	0.29			0.29	0.29	72		1.04	1.35	2.22	1.61	1.62	1.61	1.61
	10	12	12	12	12	1.16	0.88	0.91	0.29			0.29	0.29	72		1.16	1.50	1.72	2.08	2.04	1.79	1.78
<u>16x6</u>	0<2	12	12	12	12	0.80	0.83	0.71	0.29	0.29	0.29	0.29	0.29	67 *		1.04	1.35	2.12	1.52	1.57	1.60	1.27
	2<3	12	12	12	12	0.85	0.83	0.71	0.29			0.29	0.29	78		1.05	1.36	2.15	1.55	1.59	1.63	1.30
	3-5	12	12	12	12	0.81	0.74	0.68	0.29			0.29	0.29	72		1.12	1.45	2.39	1.73	1.73	1.73	1.69
	10	12	12	12	12	1.09	0.92	0.96	0.29			0.29	0.29	66		1.20	1.55	2.83	2.17	2.12	1.85	1.85
<u>16x7</u>	0<2	12	12	12	12	0.74	0.85	0.74	0.29	0.29	0.29	0.29	0.29	66 *		1.03	1.33	2.11	1.53	1.55	1.58	1.27
	2<3	12	12	12	12	0.77	0.83	0.74	0.29			0.29	0.29	72		1.01	1.31	2.08	1.56	1.53	1.56	1.30
	3-5	12	12	12	12	0.77	0.74	0.74	0.29			0.29	0.29	72		1.07	1.39	2.29	1.65	1.65	1.65	1.82
	10	12	12	12	12	1.03	1.01	0.98	0.29			0.29	0.29	66		1.06	1.37	2.49	1.91	1.87	1.64	1.63
<u>16x8</u>	0<2	12	12	12	12	0.72	0.88	0.83	0.29	0.29	0.29	0.29	0.29	65 *		1.03	1.34	2.14	1.60	1.55	1.60	1.37
	2<3	12	12	12	12	0.74	0.88	0.83	0.29			0.29	0.29	72		1.05	1.36	2.17	1.62	1.57	1.62	1.39
	3-5	12	12	12	12	0.72	0.74	0.74	0.29			0.29	0.29	72		1.03	1.33	2.21	1.59	1.58	1.59	1.72
	10	12	12	12	12	1.00	1.01	1.01	0.29			0.29	0.29	66		1.04	1.35	2.45	1.88	1.84	1.61	1.60
<u>16x9</u>	0<2	12	12	12	12	0.69	0.88	0.83	0.29	0.29	0.29	0.29	0.29	65 *		1.00	1.30	2.08	1.55	1.50	1.55	1.33
	2<3	12	12	12	12	0.69	0.88	0.83	0.29			0.29	0.29	72		1.02	1.32	2.11	1.57	1.53	1.57	1.35
	3-5	12	12	12	12	0.69	0.78	0.83	0.29			0.29	0.29	72		1.07	1.38	2.30	1.65	1.63	1.65	1.91
	10	12	12	12	12	0.97	1.01	1.04	0.29			0.29	0.29	66		1.07	1.38	2.51	1.92	1.88	1.65	1.64
<u>16x10</u>	0<2	12	12	12	12	0.67	0.91	0.83	0.29	0.29	0.29	0.29	0.29	65 *		1.02	1.32	2.12	1.54	1.53	1.58	1.28
	2<3	12	12	12	12	0.67	0.91	0.81	0.29			0.29	0.29	78		1.03	1.34	2.15	1.52	1.55	1.60	1.27
	3-5	12	12	12	12	0.67	0.79	0.83	0.29			0.29	0.29	72		1.05	1.36	2.27	1.62	1.60	1.62	1.84
	10	12	12	12	12	0.91	1.01	1.06	0.29			0.29	0.29	72		1.06	1.37	2.51	1.92	1.88	1.64	1.64

16' Span Table

Span x Rise	Fill	Tt	Tb	Ts	H	As1	As2	As3	As4	As5	As6	As7	As8	M		Load Rating						
(ft)	(ft)	(in)	(in)	(in)	(in)	(in^2/ft)	(in^2/ft)	(in^2/ft)	(in^2/ft)	(in^2/ft)	(in^2/ft)	(in^2/ft)	(in^2/ft)	(in)		HL-93 Inventory	HL-93 Operating	2F1	3F1	4F1	5C1	NRL
18x4	0<2	14	12	12	12	1.52	0.88	0.78	0.29	0.29	0.29	0.29	0.29	75 *		1.09	1.41	2.27	1.59	1.60	1.64	1.26
	2<3	12	12	12	12	1.09	0.93	0.74	0.29			0.29	0.29	89		1.08	1.40	2.22	1.54	1.53	1.59	1.22
	3-5	12	12	12	12	1.13	0.83	0.74	0.29			0.29	0.29	82		1.12	1.46	2.40	1.74	1.71	1.74	1.64
	10	12	12	12	12	1.55	1.02	1.06	0.29			0.29	0.29	82		1.03	1.33	2.40	1.84	1.80	1.58	1.57
18x5	0<2	12	12	12	12	1.06	0.96	0.81	0.29	0.29	0.29	0.29	0.29	73 *		1.05	1.36	2.17	1.56	1.57	1.61	1.23
	2<3	12	12	12	12	1.06	0.96	0.81	0.29			0.29	0.29	82		1.06	1.37	2.19	1.59	1.58	1.63	1.25
	3-5	12	12	12	12	1.06	0.81	0.81	0.29			0.29	0.29	82		1.03	1.33	2.20	1.58	1.56	1.58	1.70
	10	12	12	12	12	1.31	1.11	1.15	0.29			0.29	0.29	75		1.23	1.60	2.74	2.10	2.06	1.90	1.80
18x6	0<2	12	12	12	12	1.03	0.97	0.88	0.29	0.29	0.29	0.29	0.29	72 *		1.02	1.32	2.12	1.58	1.52	1.58	1.28
	2<3	12	12	12	12	0.96	0.96	0.88	0.29			0.29	0.29	82		1.01	1.31	2.10	1.57	1.50	1.57	1.30
	3-5	12	12	12	12	1.06	0.88	0.84	0.29			0.29	0.29	75		1.09	1.41	2.33	1.68	1.64	1.68	1.66
	10	12	12	12	12	1.32	1.17	1.15	0.29			0.29	0.29	75		1.02	1.32	2.17	1.66	1.63	1.58	1.42
18x7	0<2	12	12	12	12	1.06	1.01	0.88	0.29	0.29	0.29	0.29	0.29	71 *		1.02	1.32	2.11	1.53	1.50	1.57	1.20
	2<3	12	12	12	12	0.96	1.00	0.88	0.29			0.29	0.29	82		1.03	1.34	2.15	1.55	1.53	1.59	1.22
	3-5	12	12	12	12	0.96	0.88	0.88	0.29			0.29	0.29	75		1.04	1.34	2.23	1.60	1.56	1.60	1.65
	10	12	12	12	12	1.32	1.17	1.24	0.29			0.29	0.29	75		1.15	1.49	2.67	2.05	2.00	1.77	1.75
18x8	0<2	12	12	12	12	1.06	1.06	0.96	0.29	0.29	0.29	0.29	0.29	70 *		1.04	1.35	2.17	1.61	1.54	1.61	1.28
	2<3	12	12	12	12	1.06	1.06	0.96	0.29			0.29	0.29	75		1.06	1.37	2.21	1.63	1.56	1.63	1.30
	3-5	12	12	12	12	1.06	0.92	0.96	0.29			0.29	0.29	75		1.06	1.37	2.28	1.63	1.59	1.63	1.78
	10	12	12	12	12	1.17	1.24	1.24	0.29			0.29	0.29	75		1.11	1.43	2.35	1.80	1.77	1.71	1.54
18x9	0<2	12	12	12	12	0.83	1.08	0.96	0.29	0.29	0.29	0.29	0.29	70 *		1.04	1.34	2.17	1.55	1.52	1.60	1.22
	2<3	12	12	12	12	0.88	1.06	0.96	0.29			0.29	0.29	75		1.03	1.33	2.15	1.58	1.51	1.59	1.24
	3-5	12	12	12	12	0.88	0.96	0.96	0.29			0.29	0.29	75		1.09	1.41	2.35	1.68	1.63	1.68	1.68
	10	12	12	12	12	1.06	1.24	1.32	0.29			0.29	0.29	75		1.15	1.49	2.67	2.05	2.00	1.77	1.75
18x10	0<2	12	12	12	12	0.80	1.10	0.97	0.29	0.29	0.29	0.29	0.29	70 *		1.04	1.34	2.17	1.51	1.51	1.57	1.19
	2<3	12	12	12	12	0.80	1.10	0.96	0.29			0.29	0.29	82		1.06	1.38	2.23	1.52	1.52	1.58	1.20
	3-5	12	12	12	12	0.76	0.96	0.96	0.29			0.29	0.29	75		1.05	1.37	2.28	1.63	1.57	1.63	1.62
	10	12	12	12	12	1.20	1.32	1.31	0.29			0.29	0.29	75		1.07	1.38	2.27	1.74	1.70	1.65	1.48

Span x Rise (ft)	Fill (ft)	Tt (in)	Tb (in)	Ts (in)	H (in)	As1 (in^2/ft)	As2 (in^2/ft)	As3 (in^2/ft)	As4 (in^2/ft)	As5 (in^2/ft)	As6 (in^2/ft)	As7 (in^2/ft)	As8 (in^2/ft)	M (in)		Load Rating						
																HL-93 Inventory	HL-93 Operating	2F1	3F1	4F1	5C1	NRL
20x4	0<2	14	14	12	12	1.25	1.01	0.92	0.29	0.34	0.34	0.46	0.29	78 *		1.08	1.40	2.26	1.66	1.57	1.67	1.35
	2<3	12	12	12	12	1.40	1.07	0.94	0.29			0.29	0.29	94		1.04	1.34	2.15	1.59	1.51	1.60	1.31
	3-5	12	12	12	12	1.27	0.94	0.92	0.29			0.29	0.29	86		1.04	1.35	2.23	1.60	1.56	1.61	1.60
	10	12	12	12	12	1.77	1.27	1.27	0.29			0.29	0.29	86		1.03	1.34	2.15	1.65	1.61	1.59	1.41
20x5	0<2	14	14	12	12	1.14	1.06	0.96	0.29	0.34	0.34	0.39	0.29	76 *		1.09	1.41	2.27	1.67	1.52	1.68	1.33
	2<3	12	12	12	12	1.33	1.11	1.00	0.29			0.29	0.29	86		1.03	1.34	2.14	1.59	1.51	1.60	1.31
	3-5	12	12	12	12	1.21	0.96	0.94	0.29			0.29	0.29	86		1.02	1.33	2.19	1.57	1.52	1.58	1.55
	10	12	12	12	12	1.69	1.30	1.33	0.29			0.29	0.29	86		1.00	1.30	2.10	1.61	1.58	1.55	1.37
20x6	0<2	14	14	12	12	1.11	1.06	1.01	0.29	0.34	0.34	0.34	0.29	74 *		1.04	1.34	2.17	1.59	1.50	1.60	1.28
	2<3	12	12	12	12	1.27	1.15	1.06	0.29			0.29	0.29	86		1.04	1.34	2.15	1.59	1.51	1.60	1.30
	3-5	12	12	12	12	1.16	0.99	0.99	0.29			0.29	0.29	86		1.02	1.32	2.19	1.56	1.51	1.57	1.56
	10	12	12	12	12	1.61	1.36	1.39	0.29			0.29	0.29	78		1.04	1.35	2.08	1.60	1.56	1.61	1.36
20x7	0<2	14	14	12	12	1.03	1.14	1.06	0.29	0.34	0.34	0.34	0.29	65 *		1.09	1.42	2.30	1.68	1.54	1.69	1.34
	2<3	12	12	12	12	1.28	1.19	1.10	0.29			0.29	0.29	86		1.05	1.36	2.18	1.61	1.53	1.62	1.31
	3-5	12	12	12	12	1.19	1.06	1.06	0.29			0.29	0.29	86		1.07	1.38	2.30	1.64	1.58	1.65	1.61
	10	12	12	12	12	2.00	1.41	1.43	0.29			0.29	0.29	78		1.05	1.33	2.03	1.55	1.52	1.62	1.33
20x8	0<2	14	14	12	12	1.05	1.17	1.15	0.29	0.34	0.34	0.34	0.29	63 *		1.10	1.43	2.32	1.69	1.58	1.70	1.35
	2<3	12	12	12	12	1.25	1.21	1.15	0.29			0.29	0.29	86		1.04	1.35	2.18	1.60	1.52	1.61	1.30
	3-5	12	12	12	12	1.13	1.06	1.11	0.29			0.29	0.29	78		1.03	1.33	2.21	1.58	1.51	1.58	1.65
	10	12	12	12	12	1.46	1.47	1.51	0.29			0.29	0.29	78		1.03	1.34	2.07	1.59	1.55	1.59	1.35
20x9	0<2	14	14	12	12	0.94	1.17	1.15	0.29	0.34	0.34	0.34	0.29	62 *		1.07	1.38	2.25	1.64	1.53	1.65	1.30
	2<3	12	12	12	12	1.19	1.24	1.17	0.29			0.29	0.29	86		1.04	1.35	2.18	1.60	1.51	1.61	1.29
	3-5	12	12	12	12	1.09	1.11	1.11	0.29			0.29	0.29	78		1.06	1.38	2.30	1.64	1.57	1.64	1.56
	10	12	12	12	12	1.46	1.49	1.53	0.29			0.29	0.29	78		1.06	1.38	2.14	1.64	1.60	1.64	1.40
20x10	0<2	14	14	12	12	0.91	1.20	1.15	0.29	0.34	0.34	0.34	0.29	61 *		1.07	1.39	2.26	1.64	1.54	1.65	1.30
	2<3	12	12	12	12	1.15	1.29	1.21	0.29			0.29	0.29	86		1.06	1.37	2.22	1.63	1.53	1.64	1.31
	3-5	12	12	12	12	1.06	1.11	1.17	0.29			0.29	0.29	78		1.03	1.34	2.27	1.59	1.52	1.59	1.62
	10	12	12	12	12	1.46	1.51	1.60	0.29			0.29	0.29	78		1.00	1.30	2.27	1.74	1.71	1.55	1.49

Designer Note:

Added to the 2013 C&MS 706.05 by reference.

Example Pay Item:

ITEM 611 - 14' X 5' CONDUIT, TYPE A, 706.05, AS PER PLAN, DESIGN COVER 2 FT